DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 13.28

WELDING INSPECTION REPORT

Resident Engineer: Pursell, Gary
Address: 333 Burma Road
City: Oakland, CA 94607

Report No: WIR-006547
Date Inspected: 01-May-2009

Project Name: SAS Superstructure
Prime Contractor: American Bridge/Fluor Enterprises, a JV
Contractor: Oregon Iron Works Clackamas, Or.

OSM Arrival Time: 700
OSM Departure Time: 1530
Location: Clackamas, OR

CWI Name:	Mike Gregson, Rob Walters	**CWI Present:**	☑ Yes ☐ No
Inspected CWI report:	☐ Yes ☑ No ☐ N/A	**Rod Oven in Use:**	☐ Yes ☐ No ☑ N/A
Electrode to specification:	☑ Yes ☐ No ☐ N/A	**Weld Procedures Followed:**	☑ Yes ☐ No ☐ N/A
Qualified Welders:	☑ Yes ☐ No ☐ N/A	**Verified Joint Fit-up:**	☑ Yes ☐ No ☐ N/A
Approved Drawings:	☑ Yes ☐ No ☐ N/A	**Approved WPS:**	☑ Yes ☐ No ☐ N/A
		Delayed / Cancelled:	☐ Yes ☑ No ☐ N/A

Bridge No: 34-0006
Component: Hinge K Pipe Beams

Summary of Items Observed:

The Quality Assurance Inspector Sean Vance arrived on site at Oregon Iron Works, Inc (OIW) in Clackamas, OR, to randomly observe the in process welding of the Hinge K Pipe Beam assemblies. The QA Inspector arrived on site to randomly observe the OIW Quality Control (QC) Inspectors in process and completed visual and nondestructive testing. Upon the arrival of the QA Inspector the following observations were made:

OIW Fabrication Shop-Bay 3
Hinge-K Pipe Beam Assembly 102A-1: 5/01/09
a111-1 Forging to a110-1 Base Plate
QA Inspector randomly witnessed OIW welder #T23, Mr. John Tellone backgouging on weld repair that was previously ultrasonically inspected and rejected by QC Inspector Steve Barnett.
QA Inspector noted this was a CJP (AWS D1.5 TC-U9a-S) a11-1 forging to a110-2 base plate, designated as weld joint #W2-12 & W2-13 and QA Inspector witnessed QC Inspector Rob Walter was present to verify pre-heat temperature was a minimum 66C (151F), which is compliance with the applicable OIW approved welding procedure specification (WPS 3046). QA Inspector spoke with QC Inspector Rob Walters and Mr. Walters explained the backgouge depth/length would be verified and magnetic particle testing would be performed, prior to welding.
QA Inspector spoke with Mr. John Tellone and he explained that once the backgouging was complete, the assembly 102A-1, would be moved to the submerged arc welding jig clamp for the welding process in the flat position (1G).
See picture below after excavation is complete and assembly was moved in preparation for welding.

Hinge-K Pipe Beam Assembly 102A-2: 5/01/09
a111-2 Forging to a110-2 Base Plate
QA Inspector noticed this assembly 102A-2 was sitting idle, with a pending weld repair on the CJP (AWS D1.5 TC-U9a-S) a111-2 forging to a110-2 base plate, designated as weld joint #W2-12 & W2-13.

Hinge-K Pipe Beam Assembly 102A-3: 5/01/09
a111-3 Forging to a110-3 Base Plate
QA Inspector noticed the welding on the CJP (AWS D1.5 TC-U9a-S) a111-3 pipe forging to a110-3 base plate, for pipe beam assembly 102A-3 was complete and sitting idle in the OIW South storage yard, pending 100% final ultrasonic weld inspection. QA Inspector noticed 100% preliminary ultrasonic weld inspection was completed by OIW QC Inspectors and no rejectable indications were found

Hinge-K Pipe Beam Assembly 102A-4: 5/01/09
a111-4 Forging to a110-4 Base Plate
QA Inspector noticed the welding on the CJP (AWS D1.5 TC-U9a-S) a111-4 pipe forging to a110-4 base plate, for pipe beam assembly 102A-4 was complete and was sitting idle in the OIW South storage yard, pending 100% final ultrasonic weld inspection. QA Inspector noticed 100% preliminary ultrasonic weld inspection was completed by OIW QC Inspectors and no rejectable indications were found.

Hinge-K Pipe Beam Fuse Assembly 120A-1: 5/01/09
a124-6 Half Fuse to a124-7 Half Fuse
A & G Machining
QA Inspector noticed this fuse assembly 120A-1 had arrived at OIW fabrication shop on 4/30/09 and 100% magnetic particle testing was performed by swing shift QC Inspector Steve Barnett on the exterior of fuse assembly 120A-1, after rough machining was complete by A&G and no rejectable indications were found.
QA Inspector noted Mr. Barnett had completed the applicable magnetic testing report and QA Inspector performed approximately 10% magnetic particle testing on the exterior of fuse assembly 120A-1 and found no rejectable indications. See applicable magnetic testing report (TL6028) for additional details and see picture below of fuse assembly 120A-1, after rough machining and 100% magnetic particle testing was complete.

Hinge-K Pipe Beam Fuse Assembly 120A-2: 5/01/09
a124-3 Half Fuse to a124-11 Half Fuse
QA Inspector noticed this completed fuse assembly 120A-2 was sitting idle, pending 100% final ultrasonic weld inspection. QA Inspector previously noted that the preliminary ultrasonic weld inspection was performed by OIW QC Inspector Rob Walters 0n 4/23/09 and one rejectable indication was found. QA Inspector reviewed the applicable ultrasonic testing report (UT-2244-27) and found the rejectable indication to be approximately 61mm deep, 76mm long and Mr. Walters calculated a decibal rating of +1, with a 70 transducer angle, which is rejectable per AWS D1.5 tension criteria. QA noted this non-critical weld repair had been completed and Mr. Rob Walters was present to verify depth/length of excavation and magnetic particle testing was performed on the excavation. QC Inspector Mike Gregson explained to QA Inspector that QC Inspectors Steve Barnett and Rob Walters were present to monitor in-process amps/volts and pre-heat temperatures were in compliance with the applicable welding repair procedure specification (WPS 3046). QA Inspector noted the weld repair was completed and preliminary ultrasonic weld inspection was performed on this non-critical weld repair and no rejectable indication

were found, per AWS D1.5 tension criteria.

Hinge-K Pipe Beam Fuse Assembly 120A-3: 5/01/09
a124-12 Half Fuse to a124-10 Half Fuse
QA Inspector noticed this assembly 120A-3 had been transported to A&G Machining, for rough machining to begin.

Hinge-K Pipe Beam Fuse Assembly 120A-4: 5/01/09
a124-13 Half Fuse to a124-4 Half Fuse
QA Inspector randomly witnessed welder #S53, Mr. Jerry Shepherd, perform submerged arc welding (SAW) on CJP (AWS D1.5 B-U3c-S), half fuse pipe assembly, (piece mark identified as a124-13), to half fuse pipe assembly, (piece mark identified as a124-4), in the flat position (1G).
QA Inspector spoke with QC Inspector Mike Gregson and Mr. Gregson explained that the OIW welder #S53, was performing submerged arc welding in accordance with the OIW approved welding procedure specification (WPS 4020).
QA Inspector noticed QC Inspector's Mike Gregson and Rob Walters were present and monitoring in-process welding parameters (amps/volts) and pre-heat temperatures, verifying Mr. Jerry Shepherd was in compliance with the applicable welding procedure specification (WPS 4020).
QA Inspector verified Mr. Jerry Shepherd was currently qualified for this welding process/position and performed a random pre-heat check and recorded temperatures of approximately 350 degrees Fahrenheit, which is in compliance with the OIW welding procedure specification (WPS 4020).

Hinge-K Pipe Beam Sub-Assembly a124-2: 5/01/09
a125 & b125 Ring Stiffeners to a124-2 Half Fuse
QA Inspector randomly witnessed OIW welder #O6, Mr. Tim O'Brian perform submerged arc welding (SAW) on PJP (AWS D1.5 TC-P5-S) weld joint #WM3-11 internal ring stiffener, (piece mark identified as b125), to half fuse pipe sub-assembly, (piece mark identified as a124-2), in the flat position (1G).
QA Inspector spoke with Mr. Tim O'Brian and Mr. O'Brian explained that this weld joint #WM3-11 would be completed by the end of shift and this sub-assembly would be flipped over to begin welding on the other side of these internal ring stiffeners. QA Inspector noticed the remaining weld joints on these internal ring stiffeners were identified as weld joints #WM3-02, #WM3-04, #WM3-06, #WM3-08, #WM3-10 and Mr. O'Brian explained to QA Inspector that swing shift would begin pre-heating and welding on the weld joint identified as #WM3-10.
QA Inspector spoke with QC Inspector Mike Gregson and Mr. Gregson explained that Mr. Tim O'Brian was performing submerged arc welding in accordance with the OIW approved welding procedure specification (WPS 4020).
QA Inspector also noticed Mr. Mike Gregson and QC Inspector Rob Walters were present and monitoring in-process welding parameters (amps/volts) and pre-heat temperatures, verifying Mr. Tim O'Brian was in compliance with the applicable welding procedure specification (WPS 4020).
QA Inspector verified Mr. Tim O'Brian was currently qualified for this welding process/position and performed a random pre-heat check and recorded temperatures of approximately 350 degrees Fahrenheit, which is in compliance with the OIW welding procedure specification (WPS 4020).

Hinge-K Pipe Beam Sub-Assembly a124-14: 5/01/09
a125 & b125 Ring Stiffeners to a124-14 Half Fuse

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QA Inspector noticed this a fuse sub-assembly a124-14 had been previously transferred from the OIW South storage yard to OIW fabrication shop and was sitting idle, pending SAW of the internal ring stiffeners, a125 and b125.

Material, Equipment, and Labor Tracking
QA Inspector Sean Vance performed a verification of personnel at Oregon Iron Works, Inc. and observed 6 OIW production personnel and 2 QC performing work on this project.

Summary of Conversations:
As noted above.
Comments
This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

Inspected By:	Vance,Sean	Quality Assurance Inspector
Reviewed By:	Adame,Joe	QA Reviewer